



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

MAR 19 2008

EPA Region 5 Records Ctr.



286232

REPLY TO THE ATTENTION OF

SE-5J

**MEMORANDUM**

SUBJECT: **ACTION MEMORANDUM** – Request for an Emergency Removal Action at the Deerfield Residential Mercury Spill Site, located in Deerfield, Lake County, Illinois (Site ID #B5MP).

FROM: Verneta Simon, OSC *V/S*  
Emergency Response Section III

TO: Jason El-Zein, Chief  
Emergency Response Branch I

THRU: Charles Gebien, Chief  
Response Section III

**I. PURPOSE**

The purpose of this memorandum is to request and document your approval to expend up to \$34,000 to abate an imminent and substantial threat to the public health, welfare, and the environment posed by the Deerfield Residential Mercury Spill Site (Site), located at Ash Street, Deerfield, Lake County, Illinois. This memorandum will also document my initial determination that an emergency response was needed and the decision to approve and initiate the removal actions described below. This response action was necessary to mitigate the immediate threat to public health, welfare, and the environment posed by the release of metallic mercury in the home located at the above address.

The Deerfield Residential Mercury Spill Site is not on the National Priorities List (NPL).

**II. SITE CONDITIONS AND BACKGROUND**

CERCLIS ID # ILN000510252

**Physical Location and Site Characteristics**

The Site consists of one single family home located at Ash Street in Deerfield, Illinois. On December 18, 2007, the mother reported a mercury release to the local poison control. Poison control recommended that she contact the U.S. Environmental Protection Agency (EPA). EPA Duty Officer Leonard Zintak contacted On-Scene Coordinator Verneta Simon, who arrived with START at the Ash Street home at 2200 hours. This incident was also reported to the

National Response Center and assigned NRC Case # 857783. The highest mercury level detected in the breathing zone was 29,067 nanograms per cubic meter (ng/m<sup>3</sup>) in the bedroom with the infant. The Agency for Toxic Substances and Disease Registry (ATSDR) recommends 1,000 ng/m<sup>3</sup> in the breathing zone for residential occupancy, and 10,000 ng/m<sup>3</sup> for personal belongings.

## **B. Environmental Justice Analysis**

According to the Region 5 Superfund Environmental Justice (EJ) Analysis (Attachment 1), in Illinois, 27% of residents are low income and 32% are minorities. To meet the EJ criteria, the area within one mile of the Site must have a population that is twice the state low income percentage and/or twice the state minority percentage. That is, the area must be at least 54% low income and/or 64% minority. As determined by ArcView 3.0, in the area of the Site, the low income percentage is 6% and the minority percentage is 15%. Therefore, this site does not meet the Region's EJ criteria based on demographics as identified in "Region 5 Interim Guidelines for Identifying and Addressing a Potential EJ Case, June 1998."

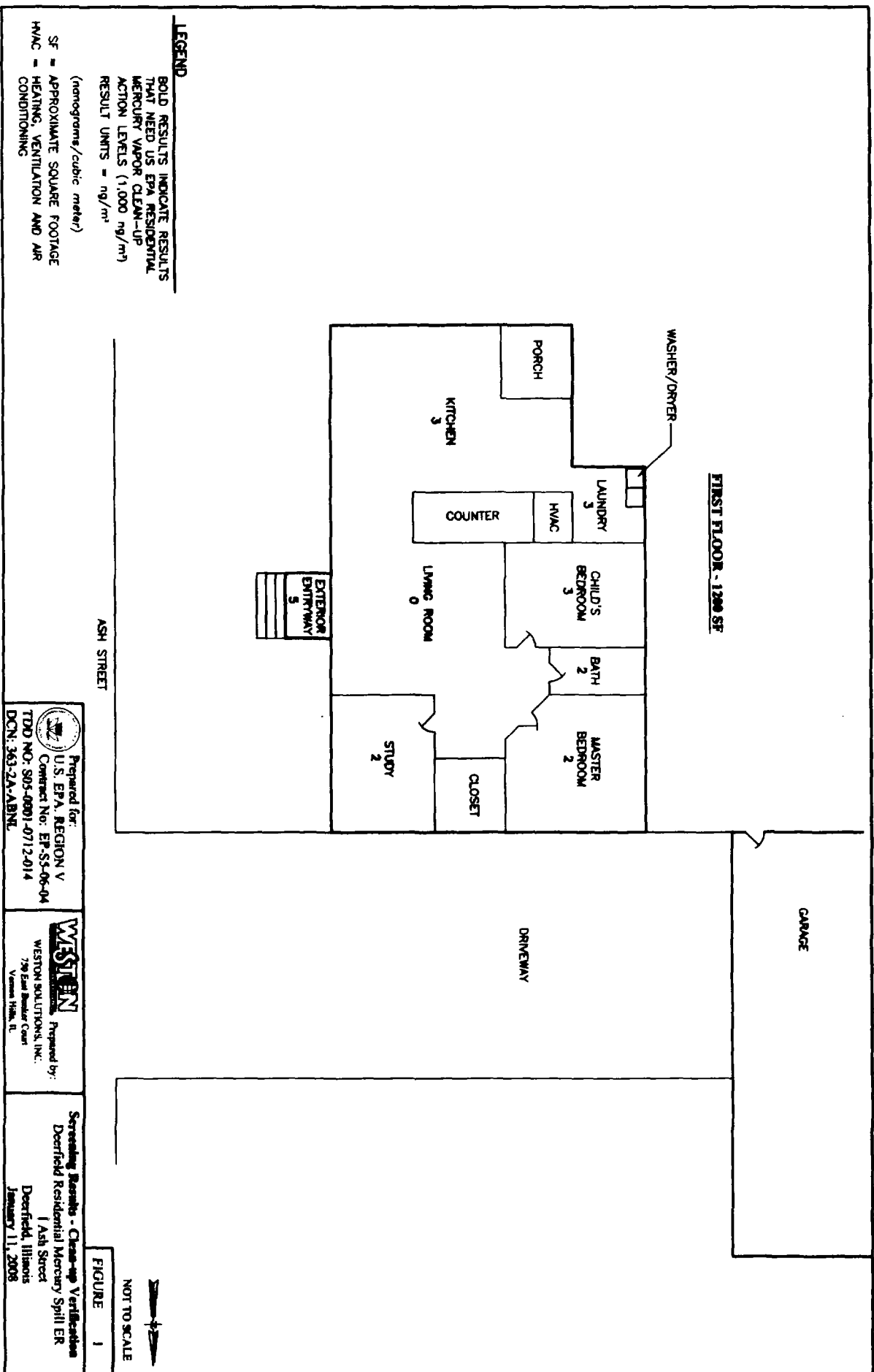
## **C. Site Background and Site Evaluation**

The Site is a one-story house with a crawlspace, approximately 1100 square feet, and detached two-car garage. This house is occupied by two adults, a three year-old child, a one year-old child, and a small dog. The release occurred when the three year-old child broke a mercury thermometer in a carpeted bedroom. The mother vacuumed up the spilled mercury. The initial Lumex readings of the maximum breathing zone levels of mercury in the house ranged from 6,250 ng/m<sup>3</sup> to 29,067 ng/m<sup>3</sup>. Due to the high mercury levels in the home and age of the children, EPA OSC Simon asked the family to vacate their home until clean-up efforts could be undertaken on the following day. The following day the Emergency Response Clean-up Contractor, Environmental Restoration (ER), arrived on site. Prior to ER arriving, OSC Simon and Weston START entered the home to take Lumex readings. These readings ranged from 9,782 to 380 ng/m<sup>3</sup>, indicating that residential occupancy was not yet possible.

ER performed the following activities:

- Installed a negative air machine and opened window to vent the house
- Bagged personal items in the child's bedroom
- Removed carpeting and under-pad
- Vacuumed all dirt, dust, and loose material under the carpet with a mercury vacuum
- Bagged carpeting, bedding, and mattress
- Placed all bagged items in a detached garage with a portable kerosene heater
- Closed windows of the house and set HVAC system to 80° F

When the temperature reached 77° F, Lumex readings were taken again and results ranged from 315 to 38 ng/m<sup>3</sup>, which is considerably lower than 1,000 ng/m<sup>3</sup>. EPA cleared the home for occupancy on December 19, 2007. Over the Christmas holiday, EPA replaced the carpet in the son's bedroom. EPA took additional readings on January 11, 2008, the results of which are shown on Figure 1.



### **III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

The conditions at the Site present a release or a threat of release of a CERCLA hazardous substance, and meet the criteria for an emergency removal action provided for in the National Contingency Plan (NCP) at 40 C.F.R. § 300.415(b)(2). These criteria include the following:

☒ YES ☐ NO i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Lumex readings taken on December 18, 2007, demonstrated the family living at the Site had been exposed to mercury. Mercury poses a threat through inhalation, ingestion, and direct contact routes of exposure, and can result in severe nausea, vomiting, abdominal pain, bloody diarrhea, kidney and liver damage, and even death. Metallic mercury is highly toxic when inhaled, and attacks the central nervous system by destroying neurons. According to ATSDR, mercury (from vapor) has a relatively short half-life of two to five days in blood.

Mercury is a characteristic waste under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq., as amended and 40 CFR § 261.24. Mercury exhibits the characteristic of toxicity D009, and is therefore a hazardous substance under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

☐ YES ☒ NO ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

☐ YES ☒ NO iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.

☐ YES ☒ NO iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

☐ YES ☒ NO v. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

☐ YES ☒ NO vi. Threat of fire or explosion.

☒ YES ☐ NO vii. The availability of other appropriate federal or state response mechanisms to respond to the release.

Since the resident had been referred to EPA by poison control and had already performed an action that exacerbated the release situation, EPA responded immediately.

☐ YES ☒ NO viii. Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

#### IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the hazardous substance on-site, and the potential exposure pathways described in Sections II and III, above, actual or threatened releases of the hazardous substance from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, may have presented an imminent and substantial endangerment to public health, welfare, or the environment.

#### V. ACTIONS & ESTIMATED COSTS

##### A. Action Description

EPA has completed the following emergency removal actions to mitigate threats posed by the presence of mercury at the Deerfield Site:

1. Developed and implemented a site health and safety plan;
2. Provided site security measures and contained the hazardous substances on Site;
3. Confirmed and characterized the extent of mercury contamination at the Site;
4. Removed mercury; and/or mercury-contaminated debris;
5. Transported and disposed of all hazardous wastes, pollutants, and contaminants at an EPA-approved facility in accordance with the EPA off-site rule at 40 C.F.R. § 300.440.
7. Decontaminated affected building structures; and
8. Used the Lumex to demonstrate that the concentrations of mercury inside the house were within ATSDR guidelines for residential occupancy.

This removal action was conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provisions of post-removal site control consistent with the provisions of Section 300.415(1) of the NCP.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the site, which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

Removal activities required two on-site working days to complete.

##### B. Estimated Costs

The estimated costs for this removal action are as follows (Attachment 2):

ERRS	\$10,000
START	10,000
Contingency (20%)	4,000
TOTAL	\$24,000

### **C. Applicable or Relevant and Appropriate Requirements**

All applicable, relevant, and appropriate requirements (ARARs) were complied with to the extent practicable considering the exigencies of the situation. Federal and state ARARs identified for the Site were:

- RCRA waste characterization requirements for disposal; and
- Mercury Lumex readings were done to confirm that the results were below ATSDR's recommended level.

### **VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Continued risk to public health and the environment would have occurred if no action was taken at the Site. In addition, if action was delayed, additional locations may have become mercury-contaminated.

### **VII. OUTSTANDING POLICY ISSUES**

None.

### **VIII. ENFORCEMENT**

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$50,861<sup>1</sup>

$$(\$24,000 + \$10,000) + (\$34,000 \times 49.59\%) = \$50,861$$

For administrative purposes, information concerning confidential enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

### **IX. RECOMMENDATION**

This decision document represents the selected removal action for the Deerfield Residential Mercury Spill Site in Deerfield, Illinois, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based upon the Administrative Record for this Site. See Attachment 3. Conditions at the Site met the NCP Section 300.415(b)(2) criteria for an emergency removal and I recommend your approval of this removal action.

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<sup>1</sup> Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

The total removal action project ceiling, if approved, will be \$34,000. Of this, an estimated \$14,000 may be used for cleanup contractor costs. You may indicate your decision by signing below.

APPROVE: Michael Harris <sup>for J.E</sup> DATE: 3/19/08

DISAPPROVE: \_\_\_\_\_ DATE: \_\_\_\_\_

#### ENFORCEMENT ADDENDUM

ATTACHMENTS:    1. Region 5 Environmental Justice Analysis  
                      2. Independent Government Estimate  
                      3. Administrative Record Index

cc: D. Chung, U.S. EPA, 5203-G  
     M. Chezick, U.S. Department of Interior, w/o Enf. Addendum  
     A. Martin, Illinois Department of Public Health

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NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION



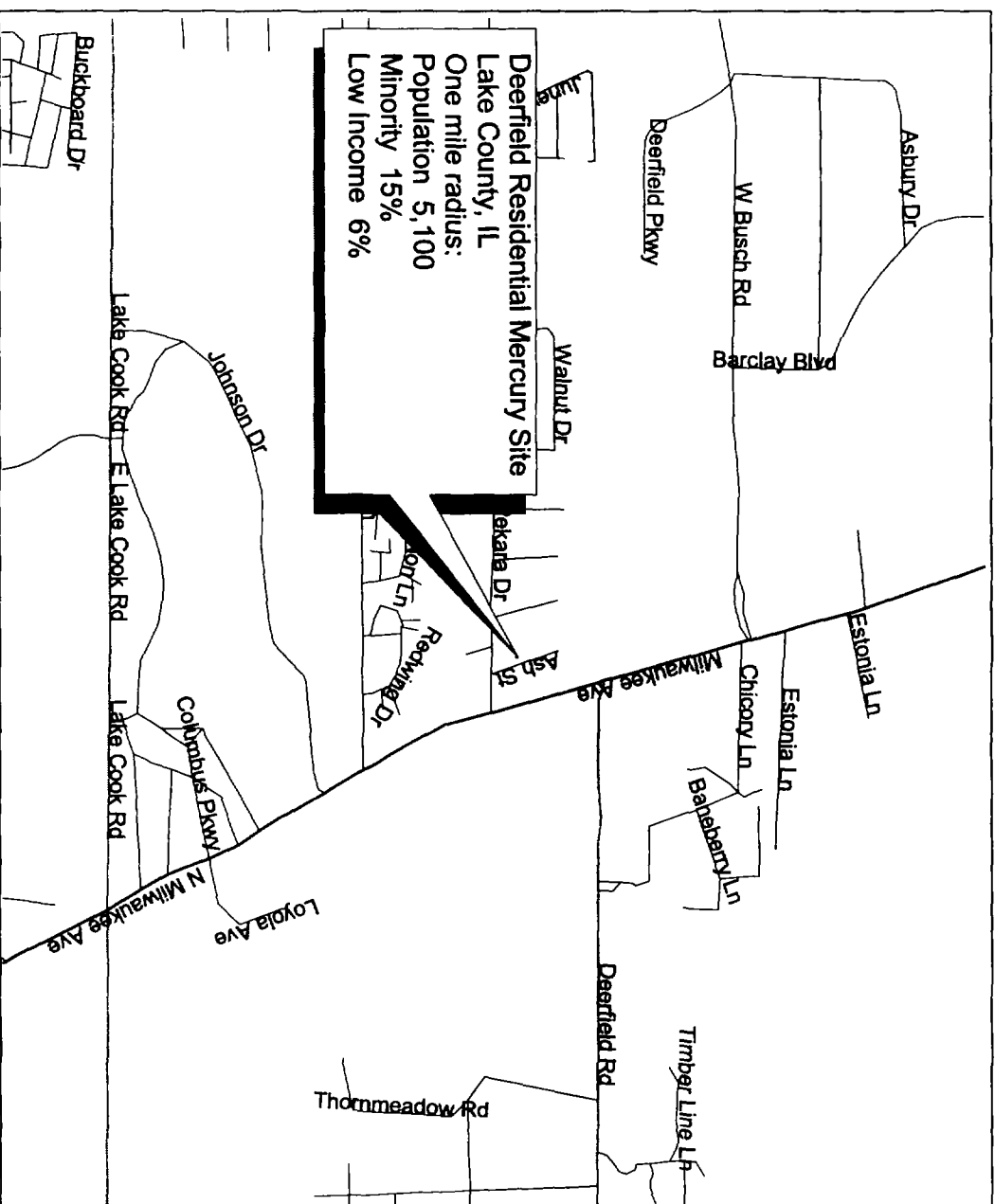
**ENFORCEMENT ADDENDUM  
DEERFIELD RESIDENTIAL MERCURY SITE  
DEERFIELD, LAKE COUNTY, ILLINOIS  
FEBRUARY 2008**

**(REDACTED 2 PAGES)**

**ENFORCEMENT CONFIDENTIAL  
NOT SUBJECT TO DISCOVERY**

# Region 5 Superfund EJ Analysis

## Deerfield Residential Mercury Site



State of Illinois averages:

Minority: 32%

Low Income: 27%

U.S. EPA Region 5  
Environmental Justice Case Criteria  
for State of Illinois

Minority: 64% or greater

Low Income: 54% or greater

Date of Map: 1/16/08

Source of Map: Census 2000 Database/  
ArcView 3.0

## **ATTACHMENT II**

**DETAILED CLEANUP CONTRACTOR COST ESTIMATE  
DEERFIELD RESIDENTIAL MERCURY SITE  
DEERFIELD, LAKE COUNTY, ILLINOIS**

**FEBRUARY 2008**

**NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION**

**(REDACTED 1 PAGE)**



## ATTACHMENT 3

### U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

#### ADMINISTRATIVE RECORD FOR DEERFIELD RESIDENTIAL MERCURY SPILL SITE DEERFIELD, LAKE COUNTY, ILLINOIS

ORIGINAL  
FEBRUARY 28, 2008

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	12/19/07	Simon, V., U.S. EPA	Distribution List	Pollution Report: POLREP No. 1 (Initial) for the Deerfield Residential Mercury Spill Site	3
2	12/19/07	Simon, V., U.S. EPA	Distribution List	Pollution Report: POLREP No. 2 for the Deerfield Residential Mercury Spill Site	3
3	12/20/07	Simon, V., U.S. EPA	File	U.S. EPA ERNS Report for the Deerfield Residential Mercury Spill Site	3
4	02/19/08	Weston Solutions, Inc.	U.S. EPA	Letter Report for the Deerfield Residential Mercury Spill Site w/ Attachments	26
5	10/31/08	Simon, V., U.S. EPA	Distribution List	Pollution Report: POLREP No. 3 (Final) for the Deerfield Residential Mercury Spill Site	3
6	00/00/00	Simon, V., U.S. EPA	El-Zein, J., U.S. EPA	Action Memorandum: Request for an Emergency Removal Action at the Deerfield Residential Mercury Spill Site (PENDING)	